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3GPP TSG–SA5 Meeting #33bis **Tdoc S5-032227r54**
Berlin, GERMANY, 7th –-11th April 2003.

Title: [DRAFT] LS on usage of GUP reference points
Response to:
Release: Release 6
Work Item: Subscription Management

Source: SA5 (SWG-A)
To: SA2
Cc: CN4, SA1, T2, SA3

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Attachments: SA5's Draft TS 32.141 v1V1.0.1 (S5-032233 TS 32.141 v.1.1.0)

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1. Overall Description:

SA5 SWGA will deliver the Release 6 Ffeature for Subscription Management (SM) (SP-020448).

SA5 is willing to consider the work of other 3GPP WGs within the release 6 time-frame that might provide a solution for the subscription management requirements identified in TS 32.140 (recently approved at SA#19).

It should be noted that:

- much of SA5's existing output is focused on managing the functional entities (called Network Elements in SA5) on the 3GPP network architecture in SA2's 23.002.

- draft 32.141 v1.0.1 (attached) on the subscription management architecture has identified **Interface N** as described in SA5's 32.102 as the initial focus of SA5.

The Generic User Profile reference points, and synchronisation capabilities are candidate solutions to support SM.

In order that SA5 can be confident that the GUP development is suited some additional knowledge transfer is required to permit SA5 to reach an objective decision.

Contributions into SA5 meeting 33-bis (04/2003) have suggested a usage of the **Rp and Rg reference points**. Ideally, SA5 would like an interactive question and answer session with members of the GUP development possibly via a conference call. To illustrate the kinds of questions and associated assumptions we SA5 have prepared the following.

2. Assumptions

1. The current set of available documents for GUP in release 6.0 are: -
   TS 22.240 (V6.0.0) Stage 1 service requirements for the 3GPP Generic User Profile
   TS 23.240 (V1.1.0) Stage 2 3GPP Generic User Profile Architecture
   TS 23.241 (V0.3.0) Stage 2 3GPP Generic User profile –Data Description Framework.

2. SA5 believe that the GUP server hold no data used for actual configuration purposes, but does support the directing of a request to the appropriate network element(s) which do hold the information utilising the Rg reference point to the RAF.

3. SA5 would like to consider the functions within the GUP server can be considered as that of a type of Network Element. The actual location of the GUP server functions could be physically ~~architected~~ located in~~to~~ another NE (e.g. HSS)

4. The Rg reference point incorporates security functions to ensure any request is authorized, and changes made by an authorized requestor cannot be repudiated.

5. Any network element, which requires configuration data, may use the bi directional capabilities of the Rg reference point to obtain the data from the entity having the master GUP data role.

3. Questions

A. What is the relationship between the functional entities defined in 23.240 and those in 23.002?

B. What reference point is used to administer the security functions in the GUP server?

C. GUP has the notion of a master GUP component. How is this master component allocated/defined?

D. It is inevitable that at some point a computing or storage device will fail beyond recovery. What mechanisms exist for storage of data in alternative backup devices e.g. the ability to change the role of a non-master component to a master role. Also demote a master component to non-master?

E. The GUP architecture shows usage of both the Rp and Rg reference points by applications. How does an application obtain an awareness of how data is distributed amongst the network, and hence which components support the RAF, to determine which components need to be communicated with via the Rp interface?

F. Are there any security mechanisms supported when using the Rp interface when accessing the RAF?

G. Subscription management in release 6 is aimed at being within the same network. With a future need after release 6 to support 3rd part operators and VASPs. Will GUP permit varying levels of access capabilities / restrictions to be defined for different Subscription management requestors?

H. Subscription management will have an initial need to be able to configure data for the GPRS / IMS applications. This necessitates being able to configure data in the HSS for specific users. E.g. the data in 23.008, 23.016, 23.060. Is there any schema definition work in progress for any of the data in these specifications?

I. Figure 4.2 of TS 23.240 depicts an RAF associated with Management Servers. The term 'Management Servers' is unknown to SA5. Please provide its definition and the source document.

~~J.~~

4. Overview of Subscription Management

Subscription management aims to ease the configuration of new services.
This is envisioned as being via the creation of profile components in the network management layer which are associated with a particular service that can be offered by the network operator.

The profile components being able to provide a base (default) set of values for a particular service.

Slight amendments will be needed to adapt the profile components for a specific following a subscriber agreeing business terms to authorising a specific set (1 or more) of users.
The profiles and associated profile components are expected to be created and stored in some form of database at the network layer.

SA5 are unsure whether or not the Rg or Rp interface should be used and how they relate to Interface N, and whether the assumptions being made by SA5 SWGA- are valid.
With assistance SA5 can confirm the- appropriate usage of the Rp and Rg interfaces and the GUP functional entities..

5. Actions:

To ~~SA1,~~ SA2~~, T2, CN4~~ group~~s~~.

ACTION: SA5 SWGA ~~asks SA1,~~ asks SA2~~, T2, CNT4 groups to participate in a conference call to cover a number of~~ to answer the questions contained in this LS to enable SA5 SWGA to present TS 32.141 for approval at SA#20 (06/2003)~~ questions, some of which are raised in this LS~~.

6. Date of Next Meeting:

TSG-SA5 Meeting #34	19-23 May 2003	Sophia Antipolis France

3GPP TS 32.141 V1.~~0~~1.0 (2003-~~03~~04)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Telecommunication Management;
Services operations management;
Subscription management architecture
(Release 6)

Keywords
UMTS, service, Telecomm Management

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The 3G environment requires more complex service delivery mechanisms and is no longer simply an internal matter for a single operator but a capability that is achieved by linking together features across multiple service providers and operators. Subscription Management is a feature that permits Service Providers, Value Added Service Providers, and Mobile Operators to provision services for a specific subscriber. The feature is necessary to allow service providers and operators to provision, control, monitor and bill the configuration of services that they offer to their subscribers.

For further detail please refer to Subscription management requirements document that gives an overview of Subscription management in addition to release 6 requirements [5].

1 Scope

The present document defines the architecture for Subscription management.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.002: "Network Architecture (Release 5)".

[3] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[4] 3GPP TS 32.102: "Telecommunication management; Architecture".

[5] 3GPP TS 32.140: "Telecommunication management; Services operations management; Subscription management requirements".

[6] 3GPP TS 23.008: "Organization of subscriber data".

[7] 3GPP TS 22.240: "Service requirements for the 3GPP Generic User Profile (GUP); Stage 1".

[8] 3GPP TS 23.240: "3GPP Generic User Profile (GUP); Stage 2; Architecture".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

subscriber: See 3GPP TR 21.905 [1].

service: See 3GPP TR 21.905 [1].

Integration Reference Point (IRP): See 3GPP TS 32.101 [3].

user: See 3GPP TR 21.905 [1].

subscription: See 3GPP TR 21.905 [1].

Subscription management: See 3GPP TR 32.140 [5].

Subscription Profile: See 3GPP TR 32.140 [5].

Subscription Profile Component: See 3GPP TR 32.140 [5].

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

2G	Second Generation Mobile
3G	Third Generation Mobile
API	Application Programming Interface
ASP	Application Service Provider
AuC	Authentication Center
B2B	Business to Business
CS	Circuit Switch
EIR	Equipment Identity Register
GTT	Global Text Telephony
GUP	Generic User Profile
HE	Home Environment
HLR	Home Location Register
HSS	Home Subscriber Server
IMS	IP Multimedia Subsystem
IRP	Integration Reference Point (3GPP TS 32.102 [4])
ISP	Internet Service Provider
NPDB	Number Portability Data Base
OAM	Operations, Administration and Maintenance
OSA	Open Services Access
OSF	Operations System Functions
OSS	Operations Support System
PS	Packet Switch
SLA	Service Level Agreement
SOM	Service Operation Management
SP	Service Provider
SuM	Subscription Management
TMN	Telecommunication Management Network
TR-IRP	Trading Partner IRP
UICC	Universal Integrated Circuit Card
USIM	Universal Subscriber Identity Module
VASP	Value Added Service Provider
VHE	Virtual Home Environment
VNO	Virtual Network Operator

4 Subscription Management Architecture

3G Telecommunication Management focuses on the most important and strategic contexts in the physical architecture for the management of UMTS. The framework to help define a telecom management physical architecture for a planned UMTS and to adopt standards and provide products that are easy to integrate is defined in 3GPP TS 32.102 [4].

Subscription Management manages Subscription Profile Components stored in network resources for the purpose of providing services to specific subscribers. This is done with an architecture that is consistent with the one specified in 3GPP TS 32.102 [4].

Subscription Profiles represent services and are associated to subscribers that employ these services (3GPP TS 32.140 [5]). To the extent the HSS controls certain services, Subscription Profile Components can be associated with the HSS. Other services, and as a result Subscription Profiles Components, are outside the jurisdiction of the HSS.

4.1 Functional Entities

Functional entities belonging to Subscription Management are described in Figure 1. The figure also contains the actors related to Subscriptions.

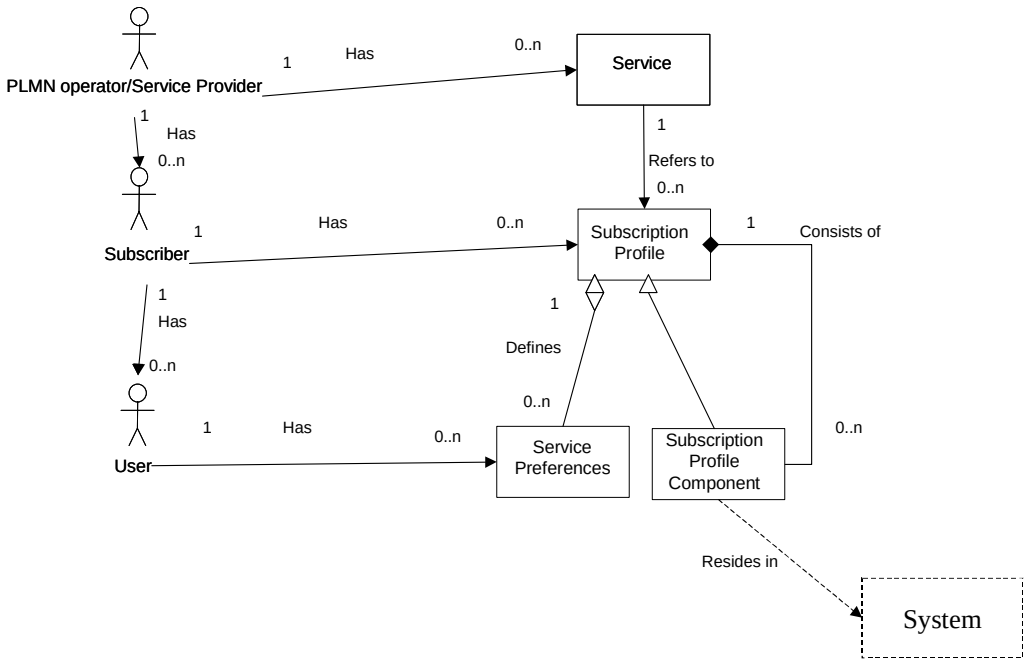

Figure 1: Functional entities in SUM

Actors described in Figure 1 are:

Subscriber (definition See TS 21.905)

User (definition See TS 21.905)

Service Provider (definition See TS 21.905)

PLMN Operator (definition See TS 21.905)

The entities described in Figure 1 are:

Subscription Profile (definition See TS 32.140)

Subscription Profile Component (definition See TS 32.140)

Service (definition See TS 21.905)

System (definition See TS 32.102)

Service Preferences: Contains the service preferences chosen for a user. Each user configures his preferences for a particular subscribed service, but only within the limits defined by the Subscription.

Clarifications to the figure:

A PLMN Operator/Service Provider has one or several Services to offer for Subscribers.

A Subscriber has one or several Subscription Profiles, where each describes an offered Service.

A User has one or several Service Preferences, where each describes the user's chosen preferences for the service.

A Subscription Profile may consist of one or several Subscription Profile Components.

A Subscription Profile may define one or several Service Preferences.

A Subscription Profile Component resides in one or several systems

~~Editor's Note: Needs to be aligned to new section on, Functional entities, in 3GPP TS 32.140. Clause 6 of 3GPP TS 32.140 will contain new entities diagram for release 6 "Functional Entities"~~

4.2 Interfaces

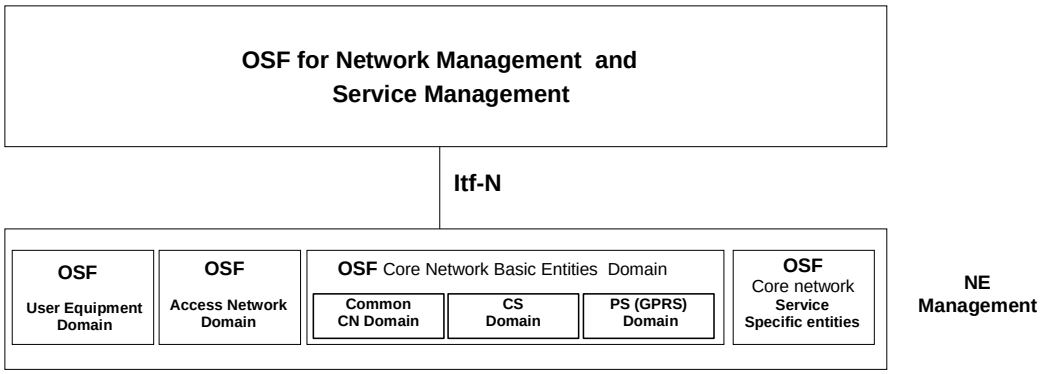

Figure 1: Overview of UMTS Telecom Management Domains and Itf-N (3GPP TS 32.102 [4])

The Itf-N for Subscription Management is realized by means of an Integration Reference Point (IRP) as defined in 3GPP TS 32.102 [4].

OSF functionality can be realized in NEs or in the NE Management systems. Subscription Management, for this release, is concerned with the OSF functionality contained in the Core Network Basic Entities Domain and specifically that of the Common CN Domain. Subscription Profile Components are located in the NEs OSF's within the Common CN Domain or their NEs OSF's in the NE management systems, and are in either case accessed consistent with the IRP concept. Subscription management OSF's for Network Management and Service Management (NM/SM OSFs) are located in network- and service management systems.

4.2.1 Relationship of Irtf-N to GUP Rp Interface

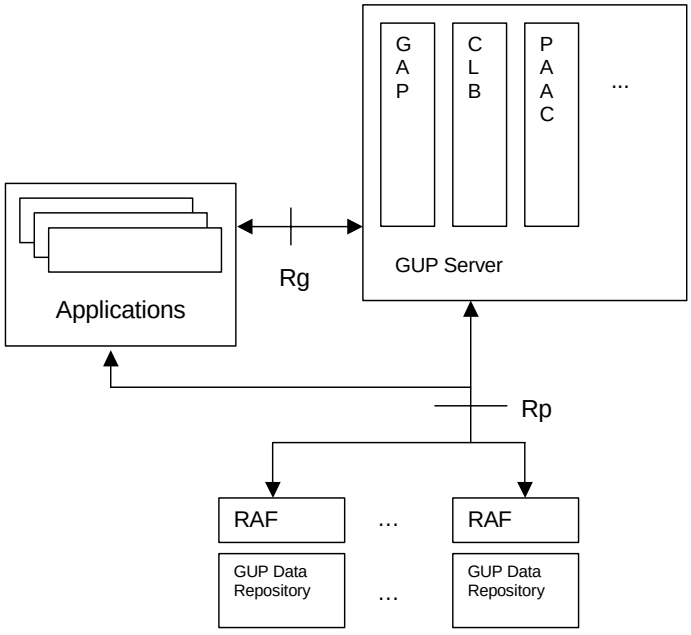

Figure 2: GUP Reference architecture

Figure 2 illustrates the GUP architecture as defined in 3GPP TS 23.240 [8].

The Rp interface of the GUP architecture is developed in such a way as to be compatible with the IRP concept. In the GUP architecture, the RAF and GUP Data Repository functionality can be viewed as providing the functionality of the NE OSF's and may be located in the NEs or the NE Management Systems. The Applications provide the NM/SM OSFs functionality and are located in the network- and service management systems.

4.3 Overview of IRP

Figures 3 and 4 identify system contexts of the IRP in terms of its implementation, called IRPAgent (3GPP TS 32.102 [4]), and the user of the IRPAgent, called IRPManager (3GPP TS 32.102 [4]).

The IRPAgent implements and supports this (SuM) IRP. The IRPAgent can reside in an Element Manager (EM) or a Network Element (NE) (3GPP TS 32.102 [4]). In the former case, the interface (represented by a thick dotted line) between the EM and the NEs is not the subject of this SUM-IRP.

An IRPManager using this SUM-IRP shall choose one of the two System Contexts defined here, for each NE. For instance, if an EM is responsible for managing a number of NEs, the NM shall access this IRP through the EM and not directly to those NEs.

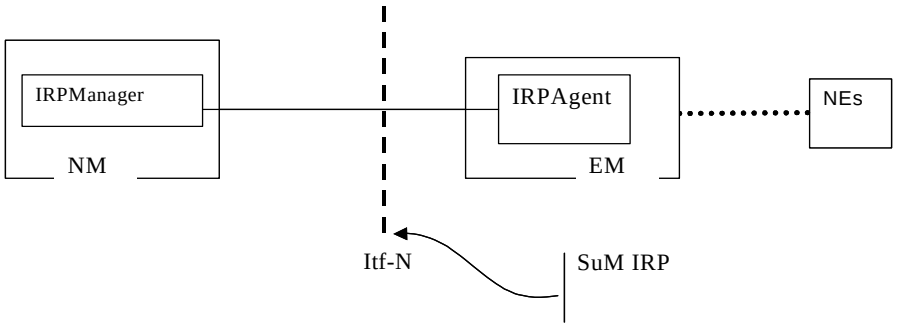

Figure 3: System Context

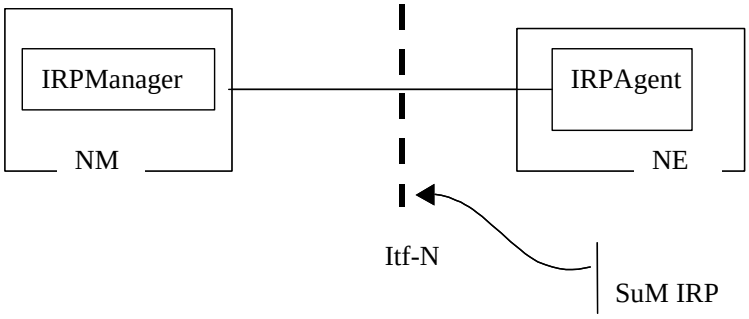

Figure 4: System Context B

4.3.1 IRP Security

The IRP interface is made secure by controlling access to the network and management systems. Operations processes must insure that only authorized personnel have the access authority to retrieve and alter SuM data. Standard protocols used over the interface between the IRPManager and the IRPAgent provide some degree of security. The exact nature of the security is described in the Solution Set for that protocol. In addition to the requirement that the IRPManager and the IRPAgent be secure, most physical links between them are secured as well.

4.4 Methodology

The methodology used to conclude the standard work for SuM shall follow the IRP methodology described in TS 32.102. This section describes how to apply that methodology.

4.4.1 SUM Stage 1

SUM Stage 1 is documented in TS 32.140

4.4.2 SUM Stage 2

SUM Stage 2 is documented as follows (*Note: the document numbers for the new documents must be checked by MCC.):*

a) Document TS 32.141 is finalized by identifying the relevant IRPs.

b) New document TS 32.161 that describes the Requirements for the Interface IRP - for the operations and notifications for SuM. TS 32.161 shall, where applicable, follow the structure from document TS 32.611

c) New document TS 32.162 that describes the Information Service for the Interface IRP - for the operations and notifications for SuM. TS 32.162 shall, where applicable, follow the structure from document TS 32.612.

d) New document TS 32.171 that describes the Requirements for the NRM IRP – containing the Information Object Classes, attributes, relations etc for SuM. TS 32.171 shall, where applicable, follow the structure from document TS 32.621.

e) New document 32.172 that describes the Information Service for the NRM IRP – containing the Information Object Classes, attributes, relations etc for SuM. TS 32.172 shall, where applicable, follow the structure from document TS 32.622.

4.4.3 SUM Stage 3

SUM stage 3 is documented in the following documents:

- TS 32.163 SuM Interface IRP: XXX Solution Set
- TS 32.173 SuM NRM IRP: XXX Solution Set

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2003	SA_19	SP-030042	--	--	Submitted to SA#19 as v1.0.0 for Information	1.0.0	--
Apr 2003	SA5#33bis	S5-032233			Functional entities defined, further specification structure as subclause 4.4	1.0.0	1.1.0